

IN THE CLAIMS

Please cancel claims 1-107, all of the claims in the application, as filed. Please also cancel claims 1-5, and 38-49, as set forth in the letter from KBA dated August 24, 2005. Please add new claims 108-192, as follows.

Claims 1-107 (Cancelled)

108. (New) An optical system usable to produce an illuminated strip on a surface of a material comprising:

an illumination device including a plurality of light sources spaced at a distance from the surface and usable to emit light to produce said illuminated strip on the surface of the material;

means supporting the material for selective movement with respect to said illumination device in a movement direction;

at least one reflector module in said illumination device and located between, in a path of light from said plurality of light sources, said light sources and the surface;

at least one mirror and a diffuser in said at least one reflector module, said at least one mirror concentrating said light emitted by said light sources onto the surface to produce said illuminated strip, said diffuser being located on a light exit side of said illumination device in said at least one reflector module; and

an illuminated strip length and an illuminated strip width, said illuminated strip width extending in said movement direction of the material, said light emitted from said light sources having a first concentration in said illuminated strip length and a second concentration in said illuminated strip width, said first concentration being greater than said second concentration.

- 109. (New) The optical system of claim 108 wherein said illumination device includes several illumination modules, each including several of said light sources, said several illumination modules being arranged in a row.
- 110. (New) The optical system of claim 109 wherein said several illumination modules each have at least one reflector module,
- 111. (New) The optical system of claim 108 wherein said plurality of light sources are divided into light source groups.
- 112. (New) The optical system of claim 111 further including a control device usable to control each of light source groups independently.
- 113. (New) The optical system of claim 109 wherein a line length of said several illumination modules arranged in a row and corresponding to said strip width can be activated by switching on selected ones of said light modules.
- 114. (New) The optical system of claim 109 wherein a line length of said several illumination modules arranged in a row and corresponding to said strip length can be activated by switching on selected ones of said light modules.

115. (New) An optical system usable to produce an illuminated strip on a surface of a material comprising:

an illumination device including a plurality of light sources spaced at a distance from the surface and usable to emit light to produce said illuminated strip on the surface of the material;

means supporting the material for relative movement with respect to said illumination device in a movement direction;

at least first and second illumination modules in said illumination device and each having at least one of said light sources, said illumination modules being arranged side by side; and

a control for said illumination device and usable to control said at least one light source in each of said at least first and second illumination modules independently of each other.

116. (New) The optical system of claim 115 wherein said illumination device includes a mirror usable to concentrate said light from said plurality of light sources onto said illuminated strip.

117. (New) The optical system of claim 115 wherein said illumination device includes a diffuser on a side of said illumination device facing the surface of the material.

118. (New) The optical system of claim 115 wherein said illumination device includes at least one reflector module.

119. (New) The optical system of claim 115 wherein each said illumination module includes a reflector module.

120. (New) The optical system of claim 119 wherein said at least one light source of each said illumination module feeds its light to its associated reflector module.

121. (New) The optical system of claim 118 wherein said at least one reflector module includes a diffuser and a mirror as a single component.

122. (New) The optical system of claim 115 wherein each said illumination module includes several of said light sources.

123. (New) The optical system of claim 118 wherein all of said light sources feed their light into said reflector module.

124. (New) The optical system of claim 115 wherein each of said illumination modules has a separate one of said control device.

125. (New) The optical system of claim 115 further including a partition between adjacent ones of said illumination modules and extending in said movement direction.

126. (New) The optical system of claim 115 wherein each of said illumination modules is functionally identical.

127. (New) The optical system of claim 115 further including a plate supporting said light sources and being cooled by a coolant.

128. (New) The optical system of claim 127 further including light source power supplies on said plate.

129. (New) The optical system of claim 127 further including a reflector module on said plate.

130. (New) The optical system of claim 117 wherein said diffuser has a grooved light exit surface.

131. (New) The optical system of claim 118 wherein said at least one reflector module has a depression extending in a longitudinal direction of said illumination device.

132. (New) The optical system of claim 131 wherein said depression divides an exit light surface of said reflector module into two partial light exit surface areas, at least one of which is a lens.

133. (New) The optical system of claim 132 wherein each of said two partial light exit surface areas have equal widths.

134. (New) The optical system of claim 132 wherein said lens is a convex lens.

135. (New) The optical system of claim 132 wherein at least one of said two partial light exit surface areas concentrates said light toward said illuminated strip to be formed on the surface of the material.

136. (New) The optical system of claim 117 wherein said diffuser is one of a lenticular and prismatic film.

137. (New) The optical system of claim 118 wherein said light sources are arranged on a side of said reflector module opposite a light exit side of said reflector module.

138. (New) The optical system of claim 137 wherein said light sources are indented into said reflector module.

139. (New) The optical system of claim 118 wherein said reflector module includes several reflector module segments arranged adjacent each other in a row in a longitudinal direction of said illumination device and each forming a light optical path for one of said plurality of light sources fed into said reflector module.

140. (New) The optical system of claim 118 wherein said reflector module forms and homogenizes light emitted by said light sources as said illuminated strip.

141. (New) The optical system of claim 115 wherein said illumination device forms said illuminated strip with a strip width extending orthogonally to a strip length on the surface of the material.

142. (New) The optical system of claim 115 wherein said illuminated strip is formed outside of a focal point of said light emitted by said light sources.

143. (New) The optical system of claim 116 wherein said mirror has at least one mirror active surface directed along one of a length and a width of said illuminated strip.

144. (New) The optical system of claim 143 wherein said mirror active surface constricts an angle of said light emitted by said light source into a smaller first enveloping light surface.

145. (New) The optical system of claim 116 further including a second mirror having at least one active optical surface, said second mirror being arranged in a central area of an optical path of light emitted by said illumination device.

146. (New) The optical system of claim 143 wherein said second mirror active optical surface diverts said light against an active optical surface of said first mirror, said active optical surface of said first mirror diverting said light to said illuminated strip.

147. (New) The optical system of claim 115 further including at least one lens positioned in a central area of an optical path of a central beam of said light emitted by said light source.

148. (New) The optical system of claim 115 wherein said illuminated strip has a strip length and a strip width and further wherein said light from said light source is concentrated more strongly along said illuminated strip length than along said illuminated strip width.

149. (New) The optical system of claim 118 wherein said reflector module includes an arrangement of at least one of mirrors and lenses.

150. (New) The optical system of claim 144 wherein said angle is less than 180° .

151. (New) The optical system of claim 116 wherein a first active surface of said mirror directed along a length of said illuminated strip constricts light emitted by said light sources into a solid angle more strongly onto a smaller second enveloping surface than does a second active surface of said mirror directed along a width of said illuminated strip.

152. (New) The optical system of claim 115 wherein at least one of said light sources includes a first mirror with at least two active surfaces that are symmetrical to a central beam emitted by said light source.

153. (New) The optical system of claim 116 wherein an active surface of said mirror is one of planar and concave.

154. (New) The optical system of claim 145 wherein said second mirror active optical surface is one of planar and concave.

155. (New) The optical system of claim 116 further including one of said mirror for each light source of said illumination device.

156. (New) The optical system of claim 147 wherein said lens is a biconvex lens.

157. (New) The optical system of claim 147 wherein a distance between said light sources and a center of said lens is less than half of a distance between said light sources and the surface of the material.

158. (New) The optical system of claim 144 wherein said solid angles of light emitted by two adjacent ones of said light sources overlap in said illuminated strip.

159. (New) The optical system of claim 158 wherein said two adjacent ones of said light source are in two adjacent modules.

160. (New) The optical system of claim 115 wherein said light sources are one of light diodes and laser diodes.

161. (New) The optical system of claim 115 wherein said light sources emit monochromatic light.

162. (New) The optical system of claim 114 wherein said direction of movement of the material is linear.

163. (New) The optical system of claim 122 wherein said light sources are arranged in a line.

164. (New) The optical system of claim 163 wherein said line is parallel to a length of said illuminated strip.

165. (New) The optical system of claim 115 wherein said illuminated strip has a strip width and wherein said movement direction is parallel to said strip width.

166. (New) The optical system of claim 115 wherein the material is a printed material.

167. (New) The optical system of claim 166 wherein said printed material is a security document.

168. (New) The optical system of claim 115 wherein said material includes a surface relief.

169. (New) The optical system of claim 115 wherein a width of said illuminated strip is at least 3 mm.

170. (New) The optical system of claim 115 wherein a distance between the surface of the material and each of said light sources is between 30 mm and 200 mm.

171. (New) The optical system of claim 115 further including a secondary device including at least one light detector which is spaced at a distance from the surface of the material and which captures light emitted by said light sources.

172. (New) The optical system of claim 171 wherein said light captured by said secondary device is reflected off the surface of the material.

173. (New) The optical system of claim 171 further including a plurality of detectors arranged in said movement direction.

174. (New) The optical system of claim 171 further including a plurality of linearly arranged ones of said detector.

175. (New) The optical system of claim 174 wherein said plurality of detectors are arranged parallel to a length of said illuminated strip.

176. (New) The optical system of claim 171 wherein said secondary device has a solid capture angle forming a cross-sectional area on the surface of the material.

177. (New) The optical system of claim 176 wherein said recording device captures at least a part of a bundle of light beams emitted by said illumination device across a width of said illuminated strip.

178. (New) The optical system of claim 171 wherein said recording device is a camera.

179. (New) The optical system of claim 171 wherein said recording device is one of a CCD array and a group of photo diodes.

180. (New) The optical system of claim 171 wherein said recording device converts said captured light into an electrical signal.

181. (New) The optical system of claim 180 further including an image processing system adapted to receive said electrical signal.

182. (New) The optical system of claim 115 wherein said optical system is an in-line inspection system.

183. (New) An optical system usable to produce an illuminated strip on a surface of a material comprising:

an illumination device including a plurality of light sources spaced at a distance from the surface and usable to produce said illuminated strip on the surface of the material, said plurality of light sources being arranged in a longitudinal direction of said illumination device;

means supporting the material for movement in a movement direction relative to said illumination device; and

a control device for said illumination device and usable to control at least one of said plurality of light sources independently of at least another one of said light sources arranged in said longitudinal direction of said illumination device.

184. (New) The optical system of claim 183 wherein said control device selectively activates said light sources arranged in said longitudinal direction of said illumination device.

185. (New) The optical system of claim 183 wherein said control device adapts a length of said illuminated strip to a width of the material to be illuminated.

186. (New) The optical system of claim 183 wherein said control device illuminates selected areas of the surface of the material in said longitudinal direction of said illumination device.

187. (New) The optical system of claim 186 wherein said selected areas of illumination are interrupted by areas illuminated differently.

188. (New) The optical system of claim 183 wherein said light sources are divided into groups of light sources.

189. (New) The optical system of claim 183 wherein said illumination device includes several light source modules arranged in a line adjacent each other.

190. (New) The optical system of claim 183 further including a reflector module receiving light from said light sources, said reflector module including a diffuser and a mirror.

191. (New) The optical system of claim 189 wherein each said light source module has at least one light source.

192. (New) The optical system of claim 189 wherein at least one of said modules includes at least one reflector module.